

REMARKS

Claims 1-17 are pending in this application. By this Amendment, the title is amended. Applicants acknowledge and thank the Examiner for indicating that claims 10 and 11 contain allowable subject matter. However, for reasons as discussed below, it is believed that all the claims are allowable. Accordingly, reconsideration of the application in view of the amendments and the following remarks is respectfully requested.

I. Amendment to Title

The Office Action objects to title as not being descriptive. Accordingly, the title has been amended to obviate the objection. Withdrawal of the objection to title is respectfully requested.

II. The Claims Define Patentable Subject Matter

The Office Action rejects claims 1-9 and 12-17 under 35 U.S.C. §102(b) as being anticipated by Dill (U.S. Patent No. 5,898,548). The rejection is respectfully traversed.

In particular, Dill does not disclose or suggest the magnetic bias means applying a bias magnetic field to the free layer, and at least one of the first conductive layer and the second conductive layer generating a magnetic field having the same direction as that of the bias magnetic field through a sense current therein, as recited in independent claim 1.

Dill discloses in Fig. 4A and in col. 6, lines 7-12 that the biasing ferromagnetic layer 150 has its magnetic moment (shown by arrow 151) aligned in the same direction as the magnetic moment 133 of the sensing ferromagnetic layer 132 in the absence of an applied magnetic field. In col. 6, lines 31-37, Dill discloses that a sense current I is directed from a electrically conductive material making up the first shield S1 to first spacer layer 102, perpendicularly through the antiferromagnetic layer 116, the fixed ferromagnetic layer 118, the tunnel barrier layer 120, and the sensing ferromagnetic layer 132 and then to second spacer layer 104 and out through second shield S2. Nowhere does Dill even mention that the sense

current I is polarized in a manner that generates a magnetic field in the same direction as that of the bias magnetic field. Stated differently, Dill does not disclose or suggest that the first conductive layer and the second conductive layer generates a magnetic field having the same direction as that of the bias magnetic field through a sense current therein. In Dill, the conductive spacer layers 102 and 104 function as electrode layers to flow a sense current perpendicular to the TMR film 100, and does not generate a magnetic field parallel to a biasing magnetic field for the TMR film 100.

Referring to Figs 4A and 4B, since the sense current flows upward in the TMR film 100, a magnetic field is generated anti-parallel to the biasing magnetic field that is illustrated by a solid arrow in Fig. 4A. Accordingly, Dill does not disclose or even suggest the features of independent claim 1.

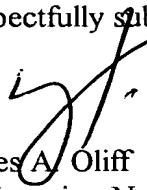
Accordingly, independent claim 1 defines patentable subject matter. Claims 2-17 depend from independent claim 1, and therefore also define patentable subject matter. Accordingly, withdrawal of the rejection under 35 U.S.C. §102(b) is respectfully requested.

III. Conclusion

In view of the foregoing amendments and remarks, this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-17 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,


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